Modules of Classes and Examinations, Odd Semester - July to Dec. (2023-'24)

CCFUP 3 Years Degree in Computer Science
Hiralal Bhakat College

Semester-I
Course Type: Major
Course Title: Computer Fundamentals & Digital Logic
Course Code: COMP 1011

Evaluation process is divided into three (3) components, viz. **C1, C2, and C3.**

Total Marks: **75** (10+5+60), Credits: 4, Lecture Hours: (45+30)

10 Marks for Internal Assessment (will be organized by the College in general and Department in Particular), that is **C1**. 10 Marks will be evaluated through **Class Test** or Assignment or Seminar. Appearance in **C1** is mandatory.

Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

Tentative **Date** and **Time** of Class Test or Assignment or Seminar: During the end of the 10th week of the semester when approximately 60% of the syllabus of course is to be completed.

5 Marks for Attendance that is **C2**.

Attendance: 50% & above but below 60% - 2 Marks
Attendance: 60% & above but below 75% - 3 Marks
Attendance: 75% & above but below 90% - 4 Marks
Attendance: 90% & Above - 5 Marks

60 (40+20) Marks for Semester-end-Examination.

40 Marks (Theory) will be organized by University.
Syllabus: Whole
Duration: Two Hours
Question Pattern:

Answer 05 questions out of 08 carrying 02 marks each = 05 x 02 = 10 marks
Answer 02 questions out of 04 carrying 05 marks each = 02 x 05 = 10 marks
Answer 02 questions out of 04 carrying 10 marks each = 02 x 10 = 20 marks

20 Marks (Practical) will be organized by College.
Syllabus: Whole
Duration: Two Hours
Question Pattern/ Marks Division:

Laboratory Note Book: 05 Marks
Viva- voce: 05 Marks
Experiment: 10 Marks

A project File (Laboratory Note Book), comprising one exercise each is to be submitted.

Topic: Computer Fundamentals & Digital Logic

Sl. No.	Topic	Lecture Hours	Name of Teacher(s)
1	Computer Fundamentals: Introduction to Computer and Problem Solving: Information and Data. Hardware: CPU, Primary and Secondary storage, I/O devices, Bus structure Software: Systems and Application. Generation of Computers: Super, Mainframe, Mini and Personal Computer. Introduction to Programming Languages: Machine Language, Assembly Language, High Level Language. Problem Solving: Flow Charts, Decision Tables and Pseudo codes. Number Systems and Codes: Number representation: Weighted Codes, Non-weighted codes, Positional, Binary, Octal, Hexadecimal, Binary Coded Decimal (BCD), Conversion of bases. Complement notions. Binary Arithmetic, Binary Codes: Gray, Alphanumeric, ASCII, EBCDIC;	15	Sk Abdul Hanif
2	Digital Logic: Combinational Circuits: Realization of AND and OR Gates using diodes and NOT Gate using transistors, Standard Gate Assemblies, IC chips packaging nomenclature, Half and Full Adder(3 & bit), Multi-bit adders – Ripple carry and Carry Look Ahead Adder, Adder/subtractor, BCD-Adder, Data selectors/multiplexers – expansions, reductions, function realization, universal function 5 realization, multi-function realization, Decoders: function realization, Demultiplexer and function realization, Encoder, Priority Encoder, etc.	30	
3	Digital Circuit Design:	30	

Semester-I
Course Type: Skill Enhancement Course (SEC)
Course Title: Programming in Python (Practical)
Course Code: COMP 1051

Evaluation process is divided into three (3) components, viz. C1, C2, and C3.

Total Marks: **50** (10+40), Credits: 3, Lecture Hours: 90

10 Marks for Internal Assessment (will be organized by the College in general and Department in Particular), that is **C1**. 10 Marks will be evaluated through **Class Test** or Assignment or Seminar. Appearance in C1 is mandatory.

Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

Tentative **Date** and **Time** of Class Test or Assignment or Seminar: During the end of the 10th week of the semester when approximately 60% of the syllabus of course is to be completed.

C2 is not applicable for SEC.

40 Marks for Semester-end-Examination (will be organized by university) that is **C3**.
Syllabus: Whole
Duration: Four Hours
Question Pattern:
Laboratory Notebook – 05 marks
Viva-voce – 10 marks
Experiments – 25 marks

Topic List

Sl. No.	Topic	Lecture Hours	Name of Teacher(s)
1	Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation.	20	Sk Abdul Hanif
2	Techniques of Problem Solving: Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	20	
3	Overview of Programming: Structure of a Python Program, Elements of Python	10	
4	Introduction to Python: Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators(Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator, List , Tuple , Set and Dictionary.	20	
5	Creating Python Programs : Input and Output Statements, Control statements(Branching, Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.	20	

Semester-I
Course Type: Minor (For other discipline)
Course Title: Computer Fundamentals & Digital Logic
Course Code: COMP 1021
Evaluation process is divided into three (3) components, viz. **C1, C2, and C3.**

Total Marks: **75** (10+5+60), Credits: 4, Lecture Hours: (45+30)

10 Marks for Internal Assessment (will be organized by the College in general and Department in Particular), that is **C1**. 10 Marks will be evaluated through **Class Test** or Assignment or Seminar. Appearance in **C1** is mandatory.

Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

Tentative **Date** and **Time** of Class Test or Assignment or Seminar: During the end of the 10th week of the semester when approximately 60% of the syllabus of course is to be completed.

5 Marks for Attendance that is **C2**.

Attendance: 50% & above but below 60% - 2 Marks
Attendance: 60% & above but below 75% - 3 Marks
Attendance: 75% & above but below 90% - 4 Marks
Attendance: 90% & Above - 5 Marks

60 (40+20) Marks for Semester-end-Examination.

40 Marks (Theory) will be organized by University.
Syllabus: Whole
Duration: Two Hours
Question Pattern:

Answer 05 questions out of 08 carrying 02 marks each = 05 x 02 = 10 marks
Answer 02 questions out of 04 carrying 05 marks each = 02 x 05 = 10 marks
Answer 02 questions out of 04 carrying 10 marks each = 02 x 10 = 20 marks

20 Marks (Practical) will be organized by College.
Syllabus: Whole
Duration: Two Hours
Question Pattern/ Marks Division:

Laboratory Note Book: 05 Marks
Viva- voce: 05 Marks
Experiment: 10 Marks

A project File (Laboratory Note Book), comprising one exercise each is to be submitted.

Topic: Computer Fundamentals & Digital Logic

Sl. No.	Topic	Lecture Hours	Name of Teacher(s)
1	Computer Fundamentals: Introduction to Computer and Problem Solving: Information and Data. Hardware: CPU, Primary and Secondary storage, I/O devices, Bus structure Software: Systems and Application. Generation of Computers: Super, Mainframe, Mini and Personal Computer. Introduction to Programming Languages: Machine Language, Assembly Language, High Level Language. Problem Solving: Flow Charts, Decision Tables and Pseudo codes. Number Systems and Codes: Number representation: Weighted Codes, Non-weighted codes, Positional, Binary, Octal, Hexadecimal, Binary Coded Decimal (BCD), Conversion of bases. Complement notions. Binary Arithmetic, Binary Codes: Gray, Alphanumeric, ASCII, EBCDIC;	15	Sk Abdul Hanif

2	Digital Logic: Combinational Circuits: Realization of AND and OR Gates using diodes and NOT Gate using transistors, Standard Gate Assemblies, IC chips packaging nomenclature, Half and Full Adder(3 & bit), Multi-bit adders – Ripple carry and Carry Look Ahead Adder, Adder/subtractor, BCD-Adder, Data selectors/multiplexers – expansions, reductions, function realization, universal function 5 realization, multi-function realization, Decoders: function realization, Demultiplexer and function realization, Encoder, Priority Encoder, etc.	30	
3	Digital Circuit Design:	30	

Modules of Classes and Examinations, Odd Semester- July to Dec. (2023-'24)
B.Sc. (General) in Computer Science
Semester-III
Hiralal Bhakat College, Nalhati

Core Course- (CC 3C) : Operating Systems

Evaluation process is divided into four (4) components, viz. C1, C2, C3 and C4. Internal Assessment of each course will consist of **C1** and **C2**. C1 and C2 will be taken together. 2/3 of the syllabus is to be completed during the 16th week of the course. Appearance in C1 & C2 is mandatory.

Total Marks: **75** (10+5+60), Credits: 6, Lecture Hours: 6 (per Week)

10 Marks for Internal Assessment (will be organized by College in general and Department in Particular). 10 Marks will be evaluated through Class Test or Assignment or Seminar. Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

5 Marks for Attendance that is **C3**.

Attendance: 50% & above but below 60% - 2 Marks
Attendance: 60% & above but below 75% - 3 Marks
Attendance: 75% & above but below 90% - 4 Marks
Attendance: 90% & Above - 5 Marks

60 (40+20) Marks for Semester-end-Examination.

40 Marks (Theory) will be organized by University.
Syllabus: Whole
Duration: Two Hours
Question Pattern:

Answer 05 questions out of 08 carrying 02 marks each = 05 x 02 = 10 marks
Answer 02 questions out of 04 carrying 05 marks each = 02 x 05 = 10 marks
Answer 02 questions out of 04 carrying 10 marks each = 02 x 10 = 20 marks

20 Marks (Practical) will be organized by College.
Syllabus: Whole
Duration: Two Hours
Question Pattern/ Marks Division:

Laboratory Note Book: 05 Marks
Viva- voce: 05 Marks
Experiment: 10 Marks

A project File (Laboratory Note Book), comprising one exercise each is to be submitted.

Topic List

Syllabus	Number of Lecture	Course	Name of Teacher
Introduction: System Software, Resource Abstraction, OS strategies. Types of operating systems - Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems. **Operating System Organization**: Factors in operating system design, basic OS functions, implementation consideration; process modes, methods of requesting system services – system calls and system programs.	**14 L**	**CC**	**Sk Abdul Hanif**
Process Management : System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model	**15 L**		
Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies. Memory Management: Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory	**24 L**		
Shell introduction and Shell Scripting (7L)	**7 L**		
Software Lab based on Operating Systems 1. Usage of following commands: ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd. 2. Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date. 3. Usage of following commands: chmod, grep, tput (clear, highlight), bc. 4. Shell script programs		**Practical**	**Sk Abdul Hanif**

Skill Enhancement Course-1 (SEC-1): Office Automation Tools

Evaluation process is divided into four (4) components, viz. C1, C2, C3 and C4. Internal Assessment of each course will consist of **C1** and **C2**. C1 and C2 will be taken together. 2/3 of the syllabus is to be completed during the 16th week of the course. Appearance in C1 & C2 is mandatory.

Total Marks: **50** (10+40), Credits: 4, Lecture Hours: 4 (per Week)

10 Marks for Internal Assessment (will be organized by College in general and Department in Particular). 10 Marks will be evaluated through **Class Test** or Assignment or Seminar. Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

C3 is not applicable for SEC-1.

40 Marks for Semester-end-Examination (will be organized by College) that is **C4**.
Syllabus: Whole
Duration: Four Hours
Question Pattern:

Laboratory Note Book: 05 Marks
Viva- voce: 05 Marks
Experiment: 30 Marks

A project File (Laboratory Note Book), comprising one exercise each is to be submitted.

Topic List

SEC-1 : Office Automation Tools
Theory: 20 Lectures Credit: 2

Introduction to open office/MS office/Libre office **(2L)**

Word Processing: Formatting Text, Pages, Lists, Tables (6L)

Spreadsheets: Worksheets, Formatting data, creating charts and graphs, using formulas and functions, macros, Pivot Table (6L)

Presentation Tools: Adding and formatting text, pictures, graphic objects, including charts, objects, formatting slides, notes, hand-outs, slide shows, using transitions, animations (6L)

Modules of Classes and Examinations, Odd Semester- July to Dec. (2023-'24)
B.Sc. (General) in Computer Science
Semester-V
Hiralal Bhakat College, Nalhati

Core Course: DSE-3A : Programming in Java

Evaluation process is divided into four (4) components, viz. C1, C2, C3 and C4. Internal Assessment of each course will consist of **C1** and **C2**. C1 and C2 will be taken together. 2/3 of the syllabus is to be completed during the 16th week of the course. Appearance in C1 & C2 is mandatory.

Total Marks: **75** (10+5+60), Credits: 6, Lecture Hours: 6 (per Week)

10 Marks for Internal Assessment (will be organized by College in general and Department in Particular). 10 Marks will be evaluated through Class Test or Assignment or Seminar. Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

5 Marks for Attendance that is **C3**.

Attendance: 50% & above but below 60% - 2 Marks
Attendance: 60% & above but below 75% - 3 Marks
Attendance: 75% & above but below 90% - 4 Marks
Attendance: 90% & Above - 5 Marks

60 (40+20) Marks for Semester-end-Examination.

40 Marks (Theory) will be organized by University.
Syllabus: Whole
Duration: Two Hours
Question Pattern:

Answer 05 questions out of 08 carrying 02 marks each = 05 x 02 = 10 marks
Answer 02 questions out of 04 carrying 05 marks each = 02 x 05 = 10 marks
Answer 02 questions out of 04 carrying 10 marks each = 02 x 10 = 20 marks

20 Marks (Practical) will be organized by College.
Syllabus: Whole
Duration: Two Hours
Question Pattern/ Marks Division:

Laboratory Note Book: 05 Marks
Viva- voce: 05 Marks
Experiment: 10 Marks

A project File (Laboratory Note Book), comprising one exercise each is to be submitted.

Topic

Syllabus	Number of Lecture	Course	Name of Teacher
Introduction to Java: Features of Java, JDK Environment.Object Oriented Programming Concept Overview of Programming, Paradigm, Classes, Abstraction, Encapsulation, Inheritance, Polymorphism, Difference between C++ and JAVA.Java Programming Fundamental :Structure of java program, Data types, Variables, Operators, Keywords, Naming Convention, Decision Making (if, switch),Looping(for, while) ,Type Casting	**21 L**	**DSE**	**Sk Abdul Hanif**
Classes and Objects: Creating Classes and objects, Memory allocation for objects, Constructor, Implementation of Inheritance, Implementation of Polymorphism, Method Overloading, Method Overriding, Nested and Inner classes.Arrays and Strings: Arrays, Creating an array, Types of Arrays, String class Methods, String Buffer methods	**16 L**		
Abstract Class, Interface and Packages: Modifiers and Access Control, Abstract classes and methods, Interfaces, Packages Concept, Creating user defined packages. Exception Handling: Exception types, Using try catch and multiple catch, Nested try, throw, throws and finally, Creating User defined Exceptions.	**12 L**		
File Handling: Byte Stream, Character Stream, File IO Basics, File Operations, Creating file, Reading file, Writing File. Applet Programming: Introduction, Types Applet, Applet Life cycle, Creating Applet, Applet tag	**11 L**		
Software Lab based on Java		**Practical**	**Sk Abdul Hanif**

Skill Enhancement Course-1 (SEC-3): Concepts of Software Testing

Evaluation process is divided into four (4) components, viz. C1, C2, C3 and C4. Internal Assessment of each course will consist of **C1** and **C2**. C1 and C2 will be taken together. 2/3 of the syllabus is to be completed during the 16th week of the course. Appearance in C1 & C2 is mandatory.

Total Marks: **50** (10+40), Credits: 4, Lecture Hours: 4 (per Week)

10 Marks for Internal Assessment (will be organized by College in general and Department in Particular). 10 Marks will be evaluated through **Class Test** or Assignment or Seminar. Marks division of Class Test will be 10 or **5+5** or 2+2+2+2+2.

C3 is not applicable for SEC-3.

40 Marks for Semester-end-Examination (will be organized by College) that is **C4**.
Syllabus: Whole
Duration: Four Hours
Question Pattern:

Laboratory Note Book: 05 Marks
Viva- voce: 05 Marks
Experiment: 30 Marks

A project File (Laboratory Note Book), comprising one exercise each is to be submitted.

SEC – 3: Concepts of Software Testing **(1+2 Labs)**
Theory: 20 Lectures Credit: 2

Introduction **(5L)**

Strategic Approach to Software Testing, Test Strategies for Conventional Software, Validation Testing, System Testing, Basic Terminologies, V Shaped Software Lifecycle Model

Functional Testing\ Black-box Testing **(7L)**

Boundary Value Analysis, Equivalence Class Testing, Decision Table Based Testing

Structural Testing\ White-box Testing **(8L)**

Basis Path Testing: Program Graph, DD Path graph, Cyclomatic Complexity, Graph Matrices, Control Flow Testing: Statement Coverage, Branch Coverage, Condition Coverage, Path Coverage

Books Recommended:

1. Roger S. Pressman, Software Engineering: A Practitioner's Approach, Seventh Edition, Mc Graw Hill Education.2009.
2. Yogesh Singh, Software Testing, Cambridge University Press,2011.

Head
Department of Comp. Science
Hiralal Bhakat College
Nalhati, Birbhum

HIRALAL BHAKAT COLLEGE * NALHATI, BIRBHUM * Estd-1986 W.B

Dr. Nurul Islam
Principal
Hiralal Bhakat College
Nalhati, Birbhum, W.B.

Principal
Hiralal Bhakat College
Nalhati, Birbhum